ECONOMY AND ENVIRONMENT PROGRAM FOR SOUTHEAST ASIA

POLICY BRIEF

CAN MARKET FORCES CLEAN THE AIR IN MANILA?

Metro Manila, like many cities in Southeast Asia, is badly affected by poor air quality. Legislation has failed to combat the problem due to inadequate enforcement of regulations and industry's often cavalier attitude towards pollution. However a recent study has found that taxation and other economic instruments could provide a solution.

The study, by Catherine Corpuz of the School of Economics at the University of the Philippines, drew on a wide range of research and information to get an overview of the air pollution situation in Metro Manila. Corpuz aimed to see if a market-based instrument such as a pollution tax would be an effective way to reduce pollution from the manufacturing and power generation sectors. Her main conclusion was that such a tax - properly developed and implemented - could provide these highly-polluting sectors with an incentive to dramatically reduce their air pollution emissions.

The need for an effective response to the city's air pollution is crucial. Despite efforts to move industry away from Metro Manila, most manufacturing firms remain there. The city is currently home to 69% of the country's 19,000 industrial firms - all clustered within 636 square kilometers of land. This concentration of activity means that commuters are regularly exposed to high concentrations of respirable suspended particulate. Indeed, the choking smoke that now shrouds Manila has increased the 11 million residents' chances of developing lung cancer by up to 15%.

Like many countries, the Philippines uses a regulatory approach to control the effluents and emissions from factories and industrial plant. This approach is hampered by enforcement and administrative difficulties. For example, despite supposedly strict rules, only some US$12,700 in pollution fines were collected between 1989 and 1993. Moreover the country's current

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environmental policies provide conflicting signals to polluters and give no incentive for pollution control beyond the statutory limit.

Corpuz notes that underpinning the problem is a failure to recognize the 'hidden' costs in production and consumption caused by pollution. Hence, there is a need to not only improve the command-and-control measures but to find other approaches which internalize these factors into the way businesses operate.

For Corpuz, the most promising potential solution is to use market-based instruments (MBIs) to complement regulations. MBI's utilize market signals, such as price, to influence the behaviour of companies. Examples of this approach include emission taxes, product charges or taxes and user charges. Experience elsewhere has shown that MBIs can give companies strong incentives to improve energy conservation, use less polluting energy sources, make environmental technology improvements and construct pollution control facilities. In addition, environmental taxes earn revenue for government. The use of such an approach is in its infancy in the Philippines, although a recent study, highlighted by Corpuz, found that most CEOs in the country, though unfamiliar with MBIs, were in favour of the use of market instruments for environmental management.

Of the main sources of pollution, industry and energy generation are the main ones where MBIs could be applied. Because of the pivotal role of these sectors and the fact that current economic development will make their pollution impact ever larger, Corpuz made them the subject of her study. She therefore set out to develop an emission charge that would effectively induce these industries to reduce their emissions. To investigate the feasibility of such an approach and to address inaccuracies in past assessments, she first undertook a broad-based analysis of pollution performance of her chosen industrial sectors. From this she developed detailed estimates of their emissions of a range of different pollutants.

She found that power generation in the Philippines is basically government-run and suffers from inefficiencies and outmoded equipment. Using plant-specific data, she calculated that the power plants supplying Metro Manila produce some 81,112 metric tons of SOx per year and 784 metric tons of particulate matter in the same time period. Basing her calculations on fuel consumption, she found that the city's industrial sector produces some 24,374 metric tons of controlled and un-controlled SOx emissions. Figures for the sector's particulate matter emissions were 2,643 metric tons.

Investigating why there was such poor pollution performance, Corpuz found that many companies had little feeling for how efficient their energy use was and that many suffered from poor maintenance and other inefficiencies. She also found that in Metro Manila's industrial sector, 502 of the 737 major establishments do not have the necessary pollution control facilities and even those companies equipped with the necessary technology often fail to operate it because of the cost involved.

Corpuz next addressed the issue of abatement costs. She investigated the costs of removing PM and SOx across a wide range of different industries within the two sectors. After analyzing research on the cost of implementing pollution abatement technology, Corpuz found that Metro Manila's power would require an investment of about US$121 million to deal with its SO2 emissions (approx. $1,500 per ton) by installing pollution reduction equipment such as electrostatic precipitators and flue-gas desulphurisation equipment.

In the industrial sector Corpuz found that in the food manufacturers and textile industries, for example, the use of cyclones and mechanical collectors would be most appropriate in dealing with airborne pollution problems. In contrast for paper and chemical manufacturers, wet scrubbers and baghouses would be needed. From this analysis of technology, Corpuz drew together a detailed costing of pollution abatement across the whole industrial sector. She found that it would cost an average of 6969.36 pesos per ton to get an 80% reduction in particulate matter (assuming that pollution control devices operated at this efficiency). The figure for sulphur dioxide was 17,914 pesos per tonne.

Of particular interest is the fact that in both instances - for industry and power generation - Corpuz found that a more cost-effective way of reducing pollution was not to rely on technology, but to switch to low-sulphur fuel.

To calculate what level of pollution charge that would effectively reduce overall pollution, Corpuz looked at current environmental conditions and estimated that there needs to be a 54.8% reduction in SOx emissions and a 60% reduction in emissions of particulate matter. Using her estimates for pollution abatement costs across Manila's different industries, she then calculated what the minimum cost (per ton of pollutant) of bringing about these changes would be. Her hope is that if a charge is set higher than this figure, then there would some "voluntary" abatement by firms - i.e. it would be cheaper for companies to improve their environmental performance than pay to continue to pollute.

As power stations make more contributions to ambient air quality, Corpuz suggests a two-tiered structure for Metro Manila, with separate charges for particulate matter and sulphur dioxide and different charges for the manufacturing sector and for power plants. For the power sector, P1750.86 per tonne of particulate matter and P40,725 per tonne of SO2 are suggested as potential baseline figures. For the manufacturing sector, she suggests charges of P4,500 per tonne of particulate matter and P14,200 per tonne of sulphur dioxide.

After reviewing the situation in the Philippines and the experience of other countries in implementing MBIs Corpuz recommends that more work needs to be done to improve the level of information available on industrial pollution and to review the institutional capabilities of the agencies that would be involved in the implementation of any pollution charge.

She also underlines the importance of earmarking revenue from environmental for environmental improvement and that the end goal should be to change the behavior of polluting industries for the better.

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Note: 42 pesos = 1 USD

The full text of this study is available as an EEPSEA Research Report:
Pollution Tax for Controlling Emissions from the Manufacturing and Power Generation Sectors: Metro Manila - Catherine Frances J. Corpuz

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